

## WHAT IS CLAIMED IS:

- 1 1. A method for enhancing image processing for a color reprographic system, the method  
2 comprising:  
3 scanning a scan target having known characteristics with a scanner to generate scanner  
4 data;  
5 detecting a gray balance distortion in the scanner data with respect to the known  
6 characteristics and generating scanner gray balance parameters when the gray  
7 balance distortion exceeds a balance threshold;  
8 detecting a color distortion in the scanner data with respect to the known characteristics  
9 and generating scanner color parameters;  
10 printing a printer target from a digital target;  
11 scanning the printed target with the scanner to generate printer data;  
12 correcting the scanned printer target based upon parameters generated for the scanner;  
13 and  
14 detecting a halftone frequency associated with the scanned printer target to select a  
15 descreen filter.
- 1 2. The method of claim 1, further comprising detecting a skew in the scanner data with  
2 respect to the known characteristics and generating skew parameters when the skew  
3 exceeds a skew threshold.
- 1 3. The method of claim 2, wherein detecting the skew comprises detecting a rotation of the  
2 scanned target with respect to the scanner data.
- 1 4. The method of claim 1, further comprising detecting a color fringe with respect to the  
2 known characteristics and generating scanner fringe parameters when the color fringe  
3 exceeds a color fringe threshold.
- 1 5. The method of claim 4, wherein detecting the color fringe comprises evaluating red,  
2 green, and blue pixels in an outline area of a gray patch.

- 1 6. The method of claim 1, further comprising detecting distortion associated with gray  
2 balance of the printer and generating parameters when a gray patch in the scanned printer  
3 target has a colorcast.
- 1 7. The method of claim 1, wherein scanning the scanner target comprises scanning a  
2 standard IT8 target.
- 1 8. The method of claim 1, wherein detecting the gray balance distortion comprises  
2 determining a difference between the color values for red, green, and blue pixels  
3 generated by the scanner and the known characteristics associated with a gray patch.
- 1 9. The method of claim 1, wherein detecting the color distortion comprises generating a  
2 curve for a hue based upon the color distortion.
- 1 10. The method of claim 1, wherein printing the printer target comprises printing a step  
2 wedge.
- 1 11. The method of claim 1, wherein detecting the halftone frequency further comprises  
2 selecting a descreen filter when the halftone frequency of the printer is coarse.

- 1 12. A method for enhancing image processing for a modular, color reprographic system, the  
2 method comprising:  
3 receiving an instruction to copy a page via a scanner and a printer;  
4 selecting an image processing technique from a set of image processing techniques based  
5 upon detected characteristics of the printer and the scanner;  
6 configuring the image processing technique based upon the detected characteristics;  
7 scanning the page;  
8 correcting the page data based upon the configured image processing technique; and  
9 printing the page data with the printer.
- 1 13. The method of claim 12, further comprising correcting the page data for a skew.
- 1 14. The method of claim 12, further comprising receiving user input to select a user curve  
2 and adjusting color values of the page data based upon the user curve.
- 1 15. The method of claim 14, wherein correcting the page data comprises desaturating the  
2 page data in response to the user input.
- 1 16. The method of claim 12, wherein selecting an image processing technique comprises  
2 selecting a correction for a gray balance distortion when the gray balance distortion  
3 exceeds a balance threshold.
- 1 17. The method of claim 12, wherein selecting an image processing technique comprises  
2 selecting descreen processing when the halftone frequency of the page data is determined  
3 to interact with a halftone frequency of a printer.
- 1 18. The method of claim 12, wherein selecting an image processing technique comprises  
2 selecting color fringe correction when the color fringe exceeds a fringe threshold.
- 1 19. The method of claim 12, wherein configuring the image processing technique comprises  
2 selecting a descreen filter associated with a halftone frequency of the page data.

- 1 20. The method of claim 19, wherein correcting the page data comprises enhancing edges of  
2 an area in the page data.
- 1 21. The method of claim 12, wherein printing the page data comprises generating a postscript  
2 file for the printer based upon the page data.
- 1 22. The method of claim 12, wherein printing the page data comprises compressing the page  
2 data for transmission to the printer.

- 1 22. A method for enhancing image processing for a color reprographic system, the method  
2 comprising:  
3 receiving page data to print with a printer;  
4 separating black data represented by pixels in a color space and color image data from the  
5 page data;  
6 binarizing the black data to convert the black data to black color values;  
7 determining whether halftoning associated with the printer interacts with halftoning of  
8 the page data;  
9 filtering the color image data with a descreen filter associated with the halftoning of the  
10 page data when the halftoning associated with the printer is determined to interact  
11 with the halftoning of the page data;  
12 correcting the color image data with printer correction parameters for the printer; and  
13 printing a combination of the binarized black text data and the corrected color image data  
14 with the printer.
- 1 23. The method of claim 22, further comprising combining the binarized text data and the  
2 corrected color image data and compressing the combined data for transmission to the  
3 printer.
- 1 24. The method of claim 22, further comprising scaling the black data.
- 1 25. The method of claim 22, wherein printing the combination comprises generating a  
2 postscript file to transmit to the printer.

- 1 26. An apparatus for enhancing image processing for a reprographic system, the apparatus  
2 comprising:  
3 a scanner detector to compare color image data with target data to detect differences  
4 between the color image data and the target data with respect to a gray balance  
5 distortion of a gray patch and a scanner color distortion of color values of pixels  
6 in the color image data, and to generate scanner correction parameters to  
7 compensate for the scanner color distortion and for the gray balance distortion of  
8 a scanner when the gray balance distortion exceeds a balance threshold, when the  
9 color image data is generated from a scan of a scanner target associated with the  
10 target data via the scanner;  
11 a printer detector to detect a halftone frequency with a printer based upon a pattern of  
12 pixels in the color image data and differences between the color image data and  
13 the target data with respect to a printer color distortion of color values of pixels in  
14 the color image data, and to generate printer correction parameters to describe the  
15 printer color distortion and the halftone frequency when the halftone frequency  
16 associated with the printer is below a threshold frequency, when the color image  
17 data is scanned from a printed target from the printer; and  
18 an image adjuster coupled with the scanner detector and the printer detector to adjust  
19 pixels of the color image data for distortions based upon the scanner correction  
20 parameters generated for the scanner when the scanner is associated with the color  
21 image data and the printer correction parameters generated for the printer when  
22 the printer is associated with the color image data, and to apply a descreen filter  
23 associated with the halftone frequency to adjust pixels of the color image data  
24 when the color image data is to be printed by the printer.
- 1 27. The apparatus of claim 26, further comprising a user interface coupled with the scanner  
2 detector and the printer detector to associate user preferences with user parameters and  
3 coupled with the image adjuster to modify the color image data based upon the user  
4 parameters.
- 1 28. The apparatus of claim 26, wherein the printer detector comprises a gray balance detector  
2 to detect a gray balance distortion in the color image data with respect to the target data

3           when the color image data is generated from a scan of the printer target and to generate  
4           parameters to correct for the gray balance distortion.

1   29.    The apparatus of claim 26, wherein the image adjuster comprises a skew detector to  
2           detect a skew the color image data with respect to the target data when the color image  
3           data is generated from a scan of the scanner target and to generate parameters to correct  
4           for the skew.

1   30.    The apparatus of claim 26, wherein the image adjuster comprises a data compressor to  
2           compress data to send to the printer.

1   31.    The apparatus of claim 26, wherein the image adjuster comprises a page segmenter to  
2           separate text data from the color image data to process the text data separately.

1   32.    The apparatus of claim 31, wherein the page segmenter comprises:  
2           a scaler to scale the text data and  
3           a binarizer coupled with the scaler to binarize the text data.

1   33.    The apparatus of claim 26, wherein the image adjuster comprises edge enhancement to  
2           enhance edges associated with the color image data.

1 34. A machine-accessible medium containing instructions, which when executed by a  
2 machine, cause said machine to perform operations, comprising:  
3 scanning a scan target having known characteristics with a scanner to generate scanner  
4 data;  
5 detecting a gray balance distortion in the scanner data with respect to the known  
6 characteristics and generating scanner balance parameters when the gray balance  
7 distortion exceeds a balance threshold;  
8 detecting a color distortion in the scanner data with respect to the known characteristics  
9 and generating scanner color parameters;  
10 printing a printer target from a digital target;  
11 scanning the printed target with the scanner to generate printer data;  
12 correcting the scanned printer target based upon parameters generated for the scanner;  
13 and  
14 detecting a halftone frequency associated with the scanned printer target to select a  
15 descreen filter.

1 35. The machine-accessible medium of claim 34, further comprising:  
2 receiving an instruction to copy a page via a scanner and a printer;  
3 selecting an image processing technique from a set of image processing techniques based  
4 upon detected characteristics of the printer and the scanner;  
5 configuring the image processing technique based upon the detected characteristics;  
6 scanning the page;  
7 correcting the page data based upon the configured image processing technique; and  
8 printing the page data with the printer.

1 36. The method of claim 35, wherein correcting the page data comprises correcting the page  
2 data with skew parameters when a skew distortion of the scanner data exceeds a skew  
3 threshold.



1 37. The method of claim 35, wherein correcting the page data comprises enhancing edges in  
2 the page data.

1 38. The method of claim 35, wherein correcting the page data comprises adjusting color  
2 values of the page data based upon a user input.

1 39. The machine-accessible medium of claim 34, further comprising:  
2 receiving page data to print with the printer;  
3 separating black data represented by pixels in a color space and color image data from the  
4 page data;  
5 binarizing the black data to convert the black data to black color values;  
6 determining whether the halftone frequency associated with the scanned printer target  
7 interacts with a halftone frequency associated with the page data;  
8 filtering the color image data with a halftone frequency filter associated with a halftone  
9 frequency of the page data when the halftone associated with the page data is  
10 determined to interact with the halftone frequency associated with the scanned  
11 printer target;  
12 correcting the color image data with the printer correction parameters; and  
13 printing a combination of the binarized black text data and the corrected color image data  
14 via the printer.

1 40. The method of claim 39, further comprising compressing the page data for transmission  
2 to the printer.